ON THE RELATIONSHIP BETWEEN SEISMIC AMPLITUDE AND CHARGE IN QUARRY BLASTING

by

Z. KISS – B. SIMON

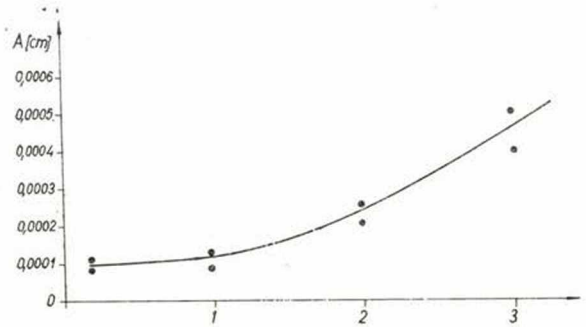
(Geophysical Institute of Loránd Eötvös University)

(Received: 30th August 1965)

Several papers on the amplitude-charge relation of seismic shooting are known from literature. According to the results, the relation between seismic-wave amplitude (A) and charge (Q) is of the following general form:

$$A = Q^n.$$

Observations have proved that this formula is not valid for commercial quarry-blasting. Situations of quarry-blasting appear to be less standard, therefore the seismic peak-amplitudes observed at the same distance scatter a great deal instead of increasing monotonously with the charge. This fact is proved by our investigations carried out at quarry-blastings in Hungary, with Krumbach-type seismographs.



1. Distance 120 metres.

Charge kilograms	Maximum amplitude in centimetres
200	0,0063
200	0,0087
250	0,0130
275	0,0059
275	0,0104
300	0,0110
1500	0,0090
1500	0,0112

2. Distance 230 metres.

Charge kilograms	Maximum amplitude in centimetres
200	0,0056
200	0,0072
250	0,0100
250	0,0120
275	0,0043
275	0,0100
300	0,0090

3. Distance 2260 metres.

Charge kilograms	Maximum amplitude in centimetres
200	0,00025
250	0,00052
275	0,00035
1500	0,00140
1500	0,00200

The scatter of amplitudes is caused by the variations in tamping. Fig. 1. shows a series of observations where the distance and the charge were constant and only the length of the clay-tamping was changed.